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EXAMINER	
POON, KING Y	
ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/033,585	NAGASHIMA, TAKEYUKI
	Examiner	Art Unit
	King Y. Poon	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 1998* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/9/2003 has been entered.

2. The letter filed on 7/8/2003 has been acknowledged.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 4, 6, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laumeyer et al. (U.S. Patent # 5,572, 632) in view of Zandee et al. (U.S. Patent # 5,872,895) and Shimomura et al (US 5,495,542).

Regarding claim 1: Laumeyer et al. teach an image processing apparatus system (10 and 12, column 10, lines 6-10) comprising: a communicator (the data communication function of system 10, column 10, lines 4-10, column 9, lines 40-50) for performing communications with an image output unit (19, fig. 1) that includes an update unit (the program of the control system that stores profiles for new media, column 11, lines 50-60) for updating condition information (the profile information, column 12, lines 26-27) indicating a condition of the image output unit (the condition that will affect the profile information includes, e.g., the printing media being used, column 12, lines 27-32, the density of toner or ink printed for a particular signal value, the unpredictable coloring results of combining different densities of the primary colorants being used by the printer, column 2, lines 30-47) and a memory (the device of the control system that is used to store the profile, column 11, lines 50-60) for storing the condition information, wherein the condition information, used for calibration, (each profile is used to calibrate the printer to use the right amount of ink according the profile information, column 11, lines 35-49) is obtained by forming color patches and measuring colors on the color patches; (column 10); an input unit (console, column 11, lines 61-67) for inputting an image output instruction; (18, fig. 2) an acquisition unit (the function part of device 12, column 12, lines 27-45 for using a profile stored for color transformation) for acquiring the condition information (data in the profile), in response to the image output instruction; (fig. 2); an image processor (device 12, column 12, lines 35-45) for performing image processing of image data in accordance with the condition information (data in the profile) acquired by the acquisition unit, quantizing the processed image data, (density of

color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the densities of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and outputting the quantized image data to the image output unit (17, fig. 1) using a communicator (the data communication function of system 10, column 10, lines 4-10, column 9, lines 40-50).

Laumeyer does not teach a two-way communicator and the acquisition unit to use the communicator for acquiring the condition information (profile) stored in the image output unit.

Zandee et al., in the same area of performing color transformation by a computer system using device profile, teaches a two-way communicator (the program of computer system, column 4, lines 5-15, that used to obtain data for profile, column 4, lines 20-25, transmitted between printers/devices, column 4, lines 20-37, column 3, line 9; and sending data for print instructions to the printer, column 3, lines 50-65) and an acquisition unit (ColorSync Utilities, column 4, line 15) using the communicator to acquire the condition information (profile) stored in the image output unit (column 4, lines 15-30).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer to include: a two-way communicator and the acquisition unit to use the communicator for acquiring the condition information (profile) stored in the image output unit.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer by the teaching of Zandee et al. because of the

following reasons: (a) a two-way communicator would have allowed the image processor not only sending print data from the image processor to the printer but also obtaining printer profile stored in the printer; (b) obtaining printer profile from the printer would have allowed the image processor to perform color transformation in case the printer profile is not located in the image processor but located in the printer; and (c) it would have allowed the image processor to update profiles located in the image processor so that the image processor would have a complete and up to day profiles for the system.

Laumeyer as modified by Zandee still does not teach wherein the image processor decreases a bit length for each pixel of the image data and then outputs the bit length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee to include: wherein the image processor decreases a bit length for each pixel of the image data (the image data being processed in accordance with the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

Regarding claim 3: Laumeyer teaches wherein the condition information is a measurement result of a plurality of patches outputted by the image output unit (column 10, lines 25-55).

Regarding claim 4: Laumeyer wherein the image processor converts image data into multi-valued data (column 8, lines 45-56, column 9, lines 15-40) corresponding to a type of a recording medium (each medium, column 11, lines 50-60) used in the image output unit, and performs image processing (column 12, lines 27-47) in accordance with the condition information.

Regarding claim 6: Laumeyer et al. teach a user interface (console 18, column 12, lines 1-15) for setting whether or not the image processing is to be done in accordance with the condition information (user select print media, column 12, lines 1-15; since each print medium has its unique condition information, column 11, lines 50-61, the selecting of one print media is setting image processing to be done in accordance with the condition information of the selected print medium).

Regarding claim 12: Laumeyer et al. teach an image processing method performed in a server (RIP 12, and job memory 15, column 10, lines 4-10) connected, via a communication network (the system that allows the separate entities, e.g., system 10, color printer, RIP to communicate, column 10, lines 4-10, fig. 1) with a host computer (system 10, fig. 1) and a

plurality of image output units (color printer 19, fig. 1), each image output unit adapted to perform a function of updating (the program of the control system that stores profiles for new media, column 11, lines 50-60) condition information, (the profile information, column 12, lines 27-32), for calibration, (each profile is used to calibrate the printer to use the right amount of ink according the profile information, column 11, lines 35-49), indicating a condition of the image output unit, the method comprising: an input step (console, column 11, lines 61-67) for inputting an image output instruction; (18, fig. 2) an acquisition step (the function part of device 12, column 12, lines 27-45 for using a profile stored for color transformation) of acquiring the condition information (data in the profile), in response to the image output instruction; (fig. 2); an image processing step (device 12, column 12, lines 35-45) of performing image processing of image data in accordance with the condition information (data in the profile) acquired by the acquisition step, quantizing the processed image data, (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the densities of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and outputting the quantized image data to the image output unit (17, fig. 1) via a communicator. (the data communication function of system 10, column 10, lines 4-10, column 9, lines 40-50).

Laumeyer does not teach a two-way communication with an image output unit and the acquisition step to use the communicator of acquiring the condition information (profile) stored in the image output unit.

Zandee et al., in the same area of performing color transformation by a computer system using device profile, teaches a two-way communicator (the program of computer system, column 4, lines 5-15, that used to obtain data for profile, column 4, lines 20-25, transmitted between printers/devices, column 4, lines 20-37, column 3, line 9; and sending data for print instructions to the printer, column 3, lines 50-65) and an acquisition unit (ColorSync Utilities, column 4, line 15) using the communicator to acquire the condition information (profile) stored in the image output unit (column 4, lines 15-30).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer to include: a two-way communication with an image output unit and the acquisition step to use the communicator of acquiring the condition information (profile) stored in the image output unit.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer by the teaching of Zandee et al. because of the following reasons: (a) a two-way communicator would have allowed the image processor not only sending print data from the image processor to the printer but also obtaining printer profile stored in the printer; (b) obtaining printer profile from the printer would have allowed the image processor to perform color transformation in case the printer profile is not located in the image processor but located in the printer; and (c) it would have allowed the image processor to update profiles located in the image processor so that the image processor would have a complete and up to day profiles for the system.

Laumeyer as modified by Zandee still does not teach wherein the image processor decreases a bit length for each pixel of the image data and then outputs the bit length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee to include: wherein the image processor decreases a bit length for each pixel of the image data (the image data being processed in accordance with the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

5. Claims 7-11, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thieret et al. (U.S. Patent # 5,923,834) in view of Laumeyer et al. (U.S. Patent # 5,923,834) and Shimomura (US 5,495,542).

Regarding claim 7: Thieret teaches an image processing apparatus (level 2 server/network server of column 11 lines 42-60) connected, via a communication network, (fig. 6) with a host computer (column 1 lines 10-31, level 3 server of column 11 lines 60-67, column 10, lines 55-65) and a plurality of image output units, (machine 1, 2, 3 of fig. 6) each image output unit adapted to perform a function (see the function of the optical sensor of column 6 line 5-25) of updating condition information (column 9 line 30-31), for calibration, (column 4, lines 48-67) of the image output unit, the condition information being obtained by forming color patches and measuring colors on the color patches (test patches, column 5, lines 15-35, column 6, lines 5-25) the apparatus comprising: an input unit (receiving part of the communication interface of column 7 line 34-45) for inputting the condition information updated by the plurality of image output units; a memory (column 8 line 59-65) for storing the inputted condition information in association with each of the plurality of image output units; a transmitter (transmitting part of the communication interface of column 7 line 34-47) for transmitting the stored condition information to the host computer in accordance with a request (see user initiated request, column 1 line 10-30) for acquiring the condition information issued by the host computer; and a management unit (see the data base for job scheduling, column 9 line 30-40) for managing an image output job of the host

computer, (see job routing of column 10 line 55-65) wherein the condition information is obtained by forming color patches and measuring colors on the color patches (See column 6 line 5-26).

Thieret does not teach wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer.

Laumeyer et al., in the same area of printing image by a printer using printer condition information teaches a host computer (10, fig. 1, column 7, lines 19-20) performs image processing of image data (column 10, lines 4-10, column 12, lines 27-45)in accordance with condition information (data in profiles, column 11, lines 50-60, column 12, line 28), and quantizes the processed image data (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the density of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and each of a plurality image output units (19, fig. 1) outputs an image based on the image data processed by the host computer (column 9).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret to include: wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret by the teaching of Laumeyer et al. because of the following reasons: (a) it would have allowed the host to output a print job to the image output unit; and (b) it would have allowed the host to perform the image processing and thereby reduced the workload in the image output unit, and allowed the image output unit to print faster for not having to process the image in the printer.

Thieret as modified by Laumeyer still does not teach wherein the image processor/host decreases a bit length for each pixel of the processed image data and then outputs the bit-length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer to include: wherein the image processor/host decreases a bit length for each pixel of the image data (processed using the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

Regarding claim 8: Thieret teaches a second management unit for managing an image output job for an image output unit (the part of data base used for print queues management, column 9 line 30-39).

Regarding claim 9: Thieret teaches wherein the image output unit comprises: an engine unit; (see marking engine of column 4 line 30-45) a condition acquisition unit (optical sensor, column 6 line 5-26) for automatically acquiring the condition information in accordance with a change in status (TRC curve of IOT, column 6) of the engine unit; and a memory (level 2 sensor of column 6 line 25-60) for storing the acquired condition information.

Regarding claim 10: Thieret teaches a user interface (214, column 9, lines 65-67, column 10, lines 1-3, column 10, lines 38-41) for setting (interconnecting diagnostic device, column 10, lines 1-3) whether or not the image processing is to be done in accordance with the condition information. (processing print job according to the condition of the printer (diagnostic data) such as paper size, color, current quality capability of the printer, column 9, lines 20-40).

Regarding claim 11: Thieret teaches an image processing method (column 6) for performing image processing in a network system (220 of fig. 5) to which an image output

apparatus, (machine 222 of fig. 5) a server, (network server, 218 of fig. 5, 256, column 10, line 36) and a network terminal (host machine, column 10, line 61) are connected, the method comprising: in the image output apparatus: a condition measurement step (the function of optical sensor of column 6 line 5-25) of updating condition information (column 9 line 30-31), for calibration, (column 4, lines 48-67) by forming color patches and measuring colors on the color patches; (column 6 line 5-25) and a notification step (see the passing of sensed data to the servers of fig. 5, column 7 line 39-41) of notifying the server of the updated condition information, (column 9 line 30-31) in the server: a storage step (column 8 line 59-67) of storing the updated condition information notified from the image output apparatus in correspondence with a type of the image output apparatus; (column 10 line 4-7) and a management step of managing an image output job, (see queues management and job scheduling, column 9 line 30-40); and in the network terminal: an acquisition step of acquiring the updated condition information stored in the server (column 9, lines 20-40, column 11, lines 60-67).

Thieret et al. do not teach the network terminal includes: an input step of inputting an image output instruction of a user; an acquisition step of acquiring the updated condition information stored in the server in response to the image output instruction; an image processing step of performing image processing using an image processing condition in accordance with the updated condition information, quantizing the processed image data and outputting the quantized image data to the image output apparatus.

Laumeyer et al. teach a host terminal (10, fig. 1, column 7, line 19) includes: an input function of inputting an image output instruction (sending a print job, column 11, lines 62-67, command of column 12, line 29) of a user; (operator, column 11, line 65); an acquisition function of acquiring the updated condition information (chosen printer profiles, column 12, lines 29-31) in response to the image output instruction; an image processing function of performing image processing using an image processing condition in accordance with the updated condition information; (column 12, lines 27-45), quantizing the processed image data, (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the densities of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and outputting the quantized image data to the image output unit (17, fig. 1).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Thieret by the teaching of Laumeyer to include in the network terminal: an input step of inputting an image output instruction of a user; an acquisition step of acquiring the updated condition information in response to the image output instruction; an image processing step of performing image processing using an image processing condition in accordance with the updated condition information, quantizing the processed image data and outputting the quantized image data to the image output apparatus.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Thieret by the teaching of Laumeyer because of the following reasons: (a) it would have allowed the network terminal to output a print job to the

image output unit; and (b) it would have allowed the network terminal to perform the image processing and thereby reduced the workload in the image output unit, and allowed the image output unit to print faster for not having to process the image in the printer.

Thieret as modified by Laumeyer still does not teach wherein the image processing step decreases a bit length for each pixel of the processed image data and then outputs the bit-length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer to include: wherein the image processing step decreases a bit length for each pixel of the image data (processed using the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1,

lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

Regarding claim 13: Thieret teaches an image processing method performed in a server (level 2 server/network server of column 11 lines 42-60) connected, via a communication network, (fig. 6) with a host computer (column 1 lines 10-31, level 3 server of column 11 lines 60-67, column 10, lines 55-65) and a plurality of image output units, (machine 1, 2, 3 of fig. 6) each image output unit adapted to perform a function (see the function of the optical sensor of column 6 line 5-25) of updating condition information (column 9 line 30-31), for calibration, (column 4, lines 48-67) of the image output unit, the condition information being obtained by forming color patches and measuring colors on the color patches (test patches, column 5, lines 15-35, column 6, lines 5-25) the method comprising: an input step (receiving part of the communication interface of column 7 line 34-45) of inputting the condition information updated by the plurality of image output units; a storage step (column 8 line 59-65) of storing the inputted condition information in association with each of the plurality of image output units; a transmission step (transmitting part of the communication interface of column 7 line 34-47) of transmitting the stored condition information to the host computer in accordance with a request (see user initiated request, column 1 line 10-30) for acquiring the condition information issued by the host computer; and a management step (see the data base for job scheduling, column 9 line 30-40) for managing an image output job of the host computer, (see job routing of column 10 line

55-65) wherein the condition information is obtained by forming color patches and measuring colors on the color patches (See column 6 line 5-26).

Thieret does not teach wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer.

Laumeyer et al., in the same area of printing image by a printer using printer condition information teaches a host computer (10, fig. 1, column 7, lines 19-20) performs image processing of image data (column 10, lines 4-10, column 12, lines 27-45)in accordance with condition information (data in profiles, column 11, lines 50-60, column 12, line 28), and quantizes the processed image data (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the density of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and each of a plurality image output units (19, fig. 1) outputs an image based on the image data processed by the host computer (column 9).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret to include: wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret by the teaching of Laumeyer et al. because of the following reasons: (a) it would have allowed the host to output a print job to the image output unit; and (b) it would have allowed the host to perform the image processing and thereby reduced the workload in the image output unit, and allowed the image output unit to print faster for not having to process the image in the printer.

Thieret as modified by Laumeyer still does not teach wherein the image processor/host decreases a bit length for each pixel of the processed image data and then outputs the bit-length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer to include: wherein the image processor/host decreases a bit length for each pixel of the image data (processed using the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laumeyer et al. (U.S. Patent # 5,572, 632) in view of Zandee et al. (U.S. Patent # 5,872,895) and Shimomura et al (US 5,495,542) as applied to claim 1 above, and further in view of Thieret et al (U.S. Patent # 5,923,834).

Regarding claim 2: Laumeyer et al. teach wherein the image output unit (19, fig. 1) further includes: an engine unit; (24, fig. 1); a condition acquisition unit (control system, column 11, lines 50-60); and storing acquired condition information in a memory (converter 20, column 12, lines 27-28).

Laumeyer in view of Zandee and Shimomura do not teach automatically acquiring the condition information in accordance with a change in status of the engine unit.

Thieret teaches automatically acquiring the condition information (column 5, lines 14-30, column 6, lines 50-60) by an image processor (level 1, and level 2 controller, column 5, lines 1-13) in accordance with a change in status (column 4, lines 55-65) of an engine unit (column 4, lines 65) to control the quality of images output by a printer (column 4, lines 47-68).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee/Shimomura by: automatically acquiring the condition information in accordance with a change in status of the engine unit.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee/Shimomura by the teaching of Thieret because of the following reasons: (a) it would have allowed the print system to control quality of images output by the print system due to changes of uncontrollable variables such as humidity or temperature and the age of the xerographic material as taught by Thieret at column 4, lines 47-67.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laumeyer et al. (U.S. Patent # 5,572, 632) in view of Zandee et al. (U.S. Patent # 5,872,895) Shimomura et al (US 5,495,542) and Satomi et al (US 5,048,078).

Regarding claim 14: Laumeyer et al. teach an image processing method implemented by a computer (system 10, lines 4-10), comprising: a communication step, of performing communications with an image output unit (color printer 19, fig. 1) that an update unit (the program of the control system that stores profiles for new media, column 11, lines 50-60) for updating condition information (the profile information, column 12, lines 26-27) indicating a condition of the image output unit (the condition that will affect the profile information includes, e.g., the printing media being used, column 12, lines 27-32, the density of toner or ink printed for a particular signal value, the unpredictable coloring results of combining different densities of the

primary colorants being used by the printer, column 2, lines 30-47) and a memory (the device of the control system that is used to store profile, column 11, lines 50-60) for storing the condition information, wherein the condition information, used for calibration, (each profile is used to calibrate the printer to use the right amount of ink according the profile information, column 11, lines 35-49) is obtained by forming color patches and measuring colors on the color patches; (column 10), an input step (console, column 11, lines 61-67) of inputting an image output instruction; (18, fig. 2); an acquisition step (the function part of device 12, column 12, lines 27-45 for using a profile stored for color transformation) of acquiring the condition information (data in the profile), in response to the image output instruction; (fig. 2); an image processing step (device 12, column 12, lines 35-45) of performing image processing of image data in accordance with the condition information (data in the profile) acquired by the acquisition unit, quantizing the processed image data, (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the densities of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and outputting the quantized image data to the image output unit (17, fig. 1) using a communicator (the data communication function of system 10, column 10, lines 4-10, column 9, lines 40-50).

Laumeyer does not teach a two-way communication with an image output unit and the acquisition step to use the communicator of acquiring the condition information (profile) stored in the image output unit.

Zandee et al., in the same area of performing color transformation by a computer system using device profile, teaches a two-way communicator (the program of computer system, column 4, lines 5-15, that used to obtain data for profile, column 4, lines 20-25, transmitted between printers/devices, column 4, lines 20-37, column 3, line 9; and sending data for print instructions to the printer, column 3, lines 50-65) and an acquisition unit (ColorSync Utilities, column 4, line 15) using the communicator to acquire the condition information (profile) stored in the image output unit (column 4, lines 15-30).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer to include: a two-way communication with an image output unit and the acquisition step to use the communicator of acquiring the condition information (profile) stored in the image output unit.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer by the teaching of Zandee et al. because of the following reasons: (a) a two-way communication would have allowed the image processor not only sending print data from the image processor to the printer but also obtaining printer profile stored in the printer; (b) obtaining printer profile from the printer would have allowed the image processor to perform color transformation in case the printer profile is not located in the image processor but located in the printer; and (c) it would have allowed the image processor to update profiles located in the image processor so that the image processor would have a complete and up to day profiles for the system.

Laumeyer as modified by Zandee still does not teach wherein the image processing of decreasing a bit length for each pixel of the image data and then outputs the bit length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit decreased image data to the image output unit (copying machines, column 1, line 21) via communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee to include: image processing of decreasing a bit length for each pixel of the image data (the image data being processed in accordance with the condition information) and then outputs the bit decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

Laumeyer/Zandee/Shimomura does not teach to use a computer readable storage medium to store the program code, used to control the method step of the computer.

Satomi teaches to use a computer readable storage medium (ROM, column 2, lines 25-30) for storing program code for a computer.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee/Shimomura's computer to include: a computer readable storage medium to store the program code, used to control the method step of the computer.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee/Shimomura's computer by the teaching of Satomi because of the following reasons: (a) it would have prevented the program from being lost that would have created a system failure; and (b) using a computer readable storage such as a ROM is highly reliable and would have provided optimal performance for program execution for the program of the computer.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thieret et al. (U.S. Patent # 5,923,834) in view of Laumeyer et al. (U.S. Patent # 5,923,834), Shimomura (US 5,495,542), and Satomi et al (US 5,048,078).

Regarding claim 15: Thieret teaches an image processing method performed in a server (level 2 server/network server of column 11 lines 42-60) connected, via a communication network, (fig. 6) with a host computer (column 1 lines 10-31, level 3 server of column 11 lines 60-67, column 10, lines 55-65) and a plurality of image output units, (machine 1, 2, 3 of fig. 6)

each image output unit adapted to perform a function (see the function of the optical sensor of column 6 line 5-25) of updating condition information (column 9 line 30-31), for calibration, (column 4, lines 48-67) of the image output unit, the condition information being obtained by forming color patches and measuring colors on the color patches (test patches, column 5, lines 15-35, column 6, lines 5-25) the method comprising: an input step (receiving part of the communication interface of column 7 line 34-45) of inputting the condition information updated by the plurality of image output units; a storage step (column 8 line 59-65) of storing the inputted condition information in association with each of the plurality of image output units; a transmission step (transmitting part of the communication interface of column 7 line 34-47) of transmitting the stored condition information to the host computer in accordance with a request (see user initiated request, column 1 line 10-30) for acquiring the condition information issued by the host computer; and a management step (see the data base for job scheduling, column 9 line 30-40) for managing an image output job of the host computer, (see job routing of column 10 line 55-65) wherein the condition information is obtained by forming color patches and measuring colors on the color patches (See column 6 line 5-26).

Thieret does not teach wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer.

Laumeyer et al., in the same area of printing image by a printer using printer condition information teaches a host computer (10, fig. 1, column 7, lines 19-20) performs image processing of image data (column 10, lines 4-10, column 12, lines 27-45)in accordance with condition information (data in profiles, column 11, lines 50-60, column 12, line 28), and quantizes the processed image data (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the density of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and each of a plurality image output units (19, fig. 1) outputs an image based on the image data processed by the host computer (column 9).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret to include: wherein the host computer performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret by the teaching of Laumeyer et al. because of the following reasons: (a) it would have allowed the host to output a print job to the image output unit; and (b) it would have allowed the host to perform the image processing and thereby reduced the workload in the image output unit, and allowed the image output unit to print faster for not having to process the image in the printer.

Thieret as modified by Laumeyer still does not teach wherein the image processor/host decreases a bit length for each pixel of the processed image data and then outputs the bit-length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer to include: wherein the image processor/host decreases a bit length for each pixel of the image data (processed using the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

Thieret/Laumeyer/Shimomura does not teach to use a computer readable storage medium to store a program code used to control the method step of the server computer.

Satomi teaches to use a computer readable storage medium (ROM, column 2, lines 25-30) for storing program code for a computer.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee/Shimomura's computer to include: a computer readable storage medium to store a program code used to control the method step of the computer.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee/Shimomura's computer by the teaching of Satomi because of the following reasons: (a) using a program would have reduced the hardware of the server and thereby; reduced the cost of the server; (b) it is more easy and cheaper to update the program of the server compares to replace hardware of the computer; (c) it would have prevented the program from being lost that would have created a system failure; and (d) using a computer readable storage such as a ROM is highly reliable and would have provided optimal performance for program execution for the program of the computer.

Response to Arguments

9. Applicant's arguments filed 6/9/2003 have been fully considered but they are not persuasive.

With respect to applicant's argument that Laumeyer does not require further processing of pixel data by the system RIP, has been considered.

In reply: Laumeyer, column 11, lines 65-67, column 12, lines 35-40, teaches to further process the processed rasterized image pixel data stored in frame buffer 16 by the converter 20 located in the RIP 12.

With respect to applicant's argument that the references cited does not teach an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit, where the image processor decreases a bit length for each pixel of the image data processed using the condition information and then output the bit-decreased image data to the output unit via a communication line, has been considered.

In reply: Laumeyer et al. teach an image processing apparatus system (10 and 12, column 10, lines 6-10) comprising: an acquisition unit (the function part of device 12, column 12, lines 27-45 for using a profile stored for color transformation) for acquiring the condition information (data in the profile), in response to the image output instruction; (fig. 2); an image processor (device 12, column 12, lines 35-45) for performing image processing of image data in accordance with the condition information (data in the profile) acquired by the acquisition unit, quantizing the processed image data, (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the densities of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and outputting the quantized image data to the image output unit (17, fig. 1) using a communicator (the data communication function of system 10, column 10, lines 4-10, column 9, lines 40-50).

Laumeyer does not teach a two-way communicator and the acquisition unit to use the communicator for acquiring the condition information (profile) stored in the image output unit.

Zandee et al., in the same area of performing color transformation by a computer system using device profile, teaches a two-way communicator (the program of computer system, column 4, lines 5-15, that used to obtain data for profile, column 4, lines 20-25, transmitted between printers/devices, column 4, lines 20-37, column 3, line 9; and sending data for print instructions to the printer, column 3, lines 50-65) and an acquisition unit (ColorSync Utilities, column 4, line 15) using the communicator to acquire the condition information (profile) stored in the image output unit (column 4, lines 15-30).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer to include: a two-way communicator and the acquisition unit to use the communicator for acquiring the condition information (profile) stored in the image output unit.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer by the teaching of Zandee et al. because of the following reasons: (a) a two-way communicator would have allowed the image processor not only sending print data from the image processor to the printer but also obtaining printer profile stored in the printer; (b) obtaining printer profile from the printer would have allowed the image processor to perform color transformation in case the printer profile is not located in the image processor but located in the printer; and (c) it would have allowed the image processor to update

profiles located in the image processor so that the image processor would have a complete and up to day profiles for the system.

Laumeyer as modified by Zandee still does not teach wherein the image processor decreases a bit length for each pixel of the image data and then outputs the bit length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee to include: wherein the image processor decreases a bit length for each pixel of the image data (the image data being processed in accordance with the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Laumeyer/Zandee by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

With respect to applicant's argument that the references cited does not teach updating the condition information indicating the condition of the image output unit, has been considered.

In reply: As point out in the office action as well as in the interview, the condition information is the profile information, in Laumeyer. For example, Laumeyer teaches to have a profile information for each kind of media which can be used by the image output unit for printing column 12, lines 26-32. The profile information is created by printing patches, using different combination of inks, and measuring color information of the printed patches, column 10. The created profile information using the printed patches is an update of the profile information before printing those patches. The profile information is also information indicating the condition of the output apparatus. For example, the condition of the output apparatus is the output apparatus using a particular of print media, column 2, lines 43-47, or the condition of the output apparatus is the condition of the output apparatus using a certain ink or toners, column 2, lines 30-42; that is being reflected in the profile information.

With respect to applicant's argument that Thieret does not teach an image processor for performing image processing of image data in accordance with the condition information acquired by the acquisition unit, where the image processor decreases a bit length for each pixel of the image data processed using the condition information and then output the bit-decreased image data to the output unit via a communication line, has been considered.

In reply: Thieret teaches an image processing method performed in a server (level 2 server/network server of column 11 lines 42-60) connected, via a communication network, (fig.

6) with a host computer/image processor (column 1 lines 10-31, level 3 server of column 11 lines 60-67, column 10, lines 55-65) and a plurality of image output units, (machine 1, 2, 3 of fig. 6) comprising a transmission step (transmitting part of the communication interface of column 7 line 34-47) of transmitting the stored condition information to the host computer/image processor in accordance with a request (see user initiated request, column 1 line 10-30) for acquiring the condition information issued by the host computer/image processor.

Thieret does not teach wherein the host computer/image processor performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer/image processor.

Laumeyer et al., in the same area of printing image by a printer using printer condition information teaches a host computer (10, fig. 1, column 7, lines 19-20) performs image processing of image data (column 10, lines 4-10, column 12, lines 27-45)in accordance with condition information (data in profiles, column 11, lines 50-60, column 12, line 28), and quantizes the processed image data (density of color patches to be used for printing, column 11, lines 15-20, column 10, lines 25-35, the density of color patches to be used are quantized, i.e., 10%, 20%, etc., of maximum density of CMY used), and each of a plurality image output units (19, fig. 1) outputs an image based on the image data processed by the host computer (column 9).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret to include: wherein the host computer/image

processor performs image processing of image data in accordance with the condition information transmitted by the transmitter, quantizes the processed image data, and wherein each of the plurality image output units outputs an image based on the image data processed by the host computer/image processor.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret by the teaching of Laumeyer et al. because of the following reasons: (a) it would have allowed the host to output a print job to the image output unit; and (b) it would have allowed the host to perform the image processing and thereby reduced the workload in the image output unit, and allowed the image output unit to print faster for not having to process the image in the printer.

Thieret as modified by Laumeyer still does not teach wherein the image processor/host decreases a bit length for each pixel of the processed image data and then outputs the bit-length decreased image data to the image output unit via a communication line.

Shimomura, in the same area of transmitting data to a printer, teaches decreases bit length (N, column 1, lines 20-35) for each pixel (column 1, line 22) of the processed image data and then outputs (transmit, column 1, line 32) the bit-length decreased image data to the image output unit (copying machines, column 1, line 21) via a communication line. (Transmission lines, column 1, line 29)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer to include: wherein the image

processor/host decreases a bit length for each pixel of the image data (processed using the condition information) and then outputs the bit-length decreased image data to the image output unit via a communication line.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified Thieret/Laumeyer by the teaching of Shimomura because of the following reasons: (a) to obtain industrial advantages as taught by Shimomura at column 1, lines 40-50; and (b) it would have reduced time and cost to transmit the image data, as taught by Shimomura at column 1, lines 30-32.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to King Y. Poon whose telephone number is (703) 305-0892

August 6, 2003 King Yan Poon